

# 19. Planning, Building, and Assessing an Online Information Literacy Tutorial: The LOBO Experience

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## Introduction

Each fall, first-year students arrive at colleges across the country with widely varying abilities to complete library research assignments. Some students enter higher education as veterans of the information seeking process, armed with strong school library media preparation and ready to conquer any research assignment. Far more first-year students are over-reliant on Internet resources, confused about distinctions between scholarly and popular sources, daunted by scores of article databases, and mystified by the LC classification system. Academic librarians face the challenge of establishing baseline information literacy skills in all students, often with limited time and resources. One way to confront this challenge facing academic librarians is an online information literacy tutorial.

## Setting

North Carolina State University (NCSU) is an urban, research-extensive university with an enrollment of 23,000 undergraduates. Typically, entering classes include 4,000 students. More than half are male, 80 percent are white, and 90 percent are in-state. Many first-year students at NCSU major in engineering, management, agriculture and life sciences, or humanities and social sciences.

## Library Instruction for First-Year Students

NCSU librarians partner with faculty across the university to facilitate the integration of information literacy instruction into the undergraduate curriculum. One example of this information literacy integration occurs in ENG 101, a first-year writing course. ENG 101 is the only course required of all NCSU students. In ENG 101, instructors are required to teach and assess specific learning outcomes. One of these outcomes states that students should “demonstrate critical and evaluative thinking skills in locating, analyzing, synthesizing, and using information in writing or speaking activities.”<sup>1</sup> To teach and assess this information literacy outcome, ENG 101 instructors look to their librarian colleagues for assistance.

NCSU librarians and first-year writing instructors are longtime partners in information literacy instruction. In the early 1990s, librarians created workbooks that encouraged first-year writing students to practice locating information in the library. Later that decade, librarians concluded that the face of library research changed faster than they could update the workbooks. As a result, they replaced the workbooks with an online tutorial that focused on broad information literacy concepts and required less maintenance. At first, this tutorial was well-received by ENG

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101 instructors. However, by 2001 this tutorial was deemed overly conceptual, linear, and text-heavy. As a result, ENG 101 instructors ceased to use the tutorial. Some instructors eliminated information literacy content from their courses entirely, other instructors attempted to teach library skills independently, and many instructors requested librarian-led workshops. Because there were more than 200 sections of ENG 101 each academic year, the librarian assigned to the first-year writing program was overwhelmed with requests. Even when additional librarians were enlisted to teach ENG 101 workshops, only 40 percent of the sections received library instruction. Librarians who taught information literacy workshops in other NCSU courses noted the impact of this uneven coverage. In these courses, students who had experienced library instruction in ENG 101 were bored, while those who had not were frustrated and confused. In late 2001, NCSU librarians acknowledged the need to develop a new information literacy tutorial for ENG 101.

Before starting work on a new tutorial, NCSU librarians searched the library literature to confirm the effectiveness of online approaches to information literacy instruction. The literature supplied adequate reassurance that online library instruction can be effective. According to Russell, no significant differences between learning outcomes from online and in-person lecture instruction can be documented.<sup>2</sup> Germain, Jacobson, and Kaczor concluded that there is "no difference in the effectiveness of the two types of instruction, Web and live,"<sup>3</sup> and both Holman<sup>4</sup> and Kaplowitz and Contini<sup>5</sup> supported this conclusion.

The review of the library literature also confirmed the value of online information literacy instruction. Online tutorials can be

used whenever and wherever students find it convenient. They are accessible remotely and supply independent, self-paced instruction. Online tutorials also ease the burden of generalized, drop-in instruction.<sup>6</sup> Using online tutorials for first-year students allows librarians to "guarantee that freshmen are familiar with fundamental concepts and prepared for the more advanced research skills of their academic careers."<sup>7</sup>

In January 2002, NCSU librarians commenced development of a new information literacy tutorial called Library Online Basic Orientation (LOBO). They envisioned a tutorial that would balance conceptual and practical skills; be modular, interactive, and easily integrated into the ENG 101 curriculum; and be completed by August 2002.

### **Objectives**

Development of the LOBO ([www.lib.ncsu.edu/lobo2/](http://www.lib.ncsu.edu/lobo2/)) tutorial began with an analysis of the objectives of the three stakeholder groups impacted by the proposed online information literacy tool: ENG 101 students, ENG 101 instructors, and librarians.

### **Students**

ENG 101 students face the challenge of completing college-level research papers and navigating a large academic library for the first time. For these students, an information literacy tutorial needs to fit limited attention spans and include accessible language. ENG 101 students also prefer interactive learning activities and modular designs that permit them to jump between areas of interest. ENG 101 students expected the new library tutorial to teach them to

- navigate the physical space of the library
- locate books in the catalog
- use LC call numbers

- obtain print and electronic journal articles

### **Instructors**

Because ENG 101 instructors consider library research skills necessary for good writing, they seek ways to teach their students these skills efficiently and effectively. Instructors wanted the new library tutorial to address a number of objectives, including teaching students to

- observe the steps of the research process
- evaluate resources
- avoid plagiarism
- contact librarians for help

They also expected the tutorial to

- be accessible to all sections of ENG 101
- include resources provided by the NCSU Libraries
- accommodate different instructors' teaching styles
- show students "how to" accomplish common tasks
- integrate into the context of ENG 101 course content
- help students complete a real ENG 101 assignment

### **Librarians**

All NCSU reference librarians teach classes and work at the physical and virtual reference desk. Although not all librarians teach ENG 101 students, they encounter these students when they teach library workshops in advanced courses and benefit from students gaining a baseline level of information literacy skills. As a result, reference librarians hoped the new tutorial would address a number of objectives, including teaching students to

- distinguish between scholarly and non-scholarly sources
- use databases to locate articles and the catalog to find books

- build keyword search strings using Boolean operators

- use subject headings

Librarians also wanted the tutorial to

- be available at students' point-of-need
- be useful for one-on-one instruction at the physical or virtual reference desk
- be interactive
- portray librarians as friendly and helpful
- encourage students to contact librarians for help, in-person or remotely

### **Learning Outcomes**

In addition to considering the objectives of stakeholders, NCSU librarians used learning outcomes to guide the development of the LOBO tutorial. The outcomes addressed by the LOBO tutorial were derived from several sources. These sources include the Information Literacy Competency Standards for Higher Education,<sup>8</sup> Objectives for Information Literacy Instruction: A Model Statement for Academic Librarians,<sup>9</sup> previous information literacy instruction approaches used in ENG 101, and ENG 101 curriculum.

### **Methods**

The development of the LOBO tutorial included six steps: (1) assessing needs; (2) building a framework; (3) creating content; (4) applying technology; (5) building, testing, and launching; and (6) assessing and planning for future development. These six steps were coordinated by the NCSU instruction librarian and accomplished by a team of five reference librarians and two systems librarians. As project manager, the instruction librarian orchestrated collaboration, facilitated communication, encouraged progress, and integrated the work of the LOBO team to build a cohesive tutorial. The entire LOBO team met weekly during tutorial de-

development. As the project progressed, team members moved into a “work independently, see what another team member thinks of completed work, work some more independently, then present to the team” cycle. Over time, this cycle allowed librarians with different levels of experience, skills, and work styles to communicate effectively and balance workloads fairly. Individual librarians felt valued, developed a unified vision, and understood group expectations. Franks et al. note that this behavior is often exhibited by librarians working to create an online tutorial.<sup>10</sup>

#### *Assessing Needs*

The first step of LOBO development focused on identifying all stakeholders and determining the learning outcomes to be addressed by the tutorial. Stakeholders for the LOBO tutorial included students, instructors, and librarians; the needs of each group informed the tutorial development process. This stage of LOBO development also included careful consideration of the learning outcomes taught by the tutorial.

#### *Building a Framework*

According to Franks et al., most tutorials begin as an outline.<sup>11</sup> In January 2002, NCSU librarians developed a rough outline for the LOBO tutorial that organized the learning outcomes of the tutorial around the steps of the research process. This outline served as the planning structure and ensured that the tutorial would be driven by outcomes-focused content. Furthermore, the outline enabled librarians to share concrete plans with ENG 101 instructors and gain their commitment to the tutorial project.

#### *Creating Content*

Armed with a LOBO tutorial outline, librarians met with the director of first-year writ-

ing in April 2002 to ensure that the content of the proposed tutorial would support the ENG 101 curriculum. After agreeing that the LOBO tutorial would integrate well into the course, she decided to require instructors to incorporate the tutorial in their courses and volunteered ENG 101 instructors to contribute content to the tutorial. As a result of the director’s decision, sections of the LOBO outline were assigned to individual librarians and instructors for content drafts. After initial drafts were created, instructors and librarians worked in tandem to make level of difficulty and tone revisions.

#### *Applying Technology*

After creating the content of the tutorial, NCSU librarians searched the library literature for guidelines governing technological aspects of tutorial creation. According to Franks et al., information literacy tutorials should include “consistent use of titles and headers”; “prominent use of navigational aids”; “availability of help links”; “proper use of white space, color, and fonts”; “appropriate use of graphics”; effort to make all pages ADA compliant”; “use of templates”; and testing in various browsers, platforms, and monitors.<sup>12</sup> Dewald delves beyond appearance and navigation to list components of successful online tutorials. She includes assignment-related instruction, active learning components, clear objectives, and focus on concepts rather than on mechanics only.<sup>13</sup> Dewald also notes the importance of creating an interactive, self-paced learning tool that capitalizes on the extrinsic and intrinsic motivations of students completing research-based assignments.<sup>14</sup> ACRL includes clear objectives, interactivity, and a focus on concepts in their guidelines for tutorial construction. ACRL also recommends that tutorials have clearly defined structure, contemporary lan-

guage and topics, and strong relationships to course content.<sup>15</sup>

With these guidelines in mind, the LOBO team designed a tutorial that was outcome-focused, modular, interactive, and centered on students' motivation to complete course assignments. One librarian used Qarbon ViewletBuilder to create "movies" that demonstrated database and catalog searches. A second team member developed "wizards" to guide students through databases and the catalog using student-created search terms. A third LOBO team member developed a "keyword builder" to illustrate Boolean concepts and a "citation builder" to guide students through parsing database citations and generating works-cited citations in MLA, APA, and CSE formats. Finally, a link to the NCSU Libraries' virtual reference service was added to each page of the tutorial to ensure that students could easily access librarian assistance.

### *Building, Testing, and Launching*

In July 2002, librarians inserted all of the LOBO components into the tutorial Web template. Next, the LOBO team revised the tutorial to improve the flow and unify the tone of the tutorial. Finally, all interactive elements were tested, and the tutorial was made available to library staff for experimentation and training.

In August 2002, LOBO launched and the team members presented the new tutorial to ENG 101 instructors and offered tips for inclusion of each module in their curriculum. Instructors were most excited by the interactive components—wizards, viewlets, and builders—as well as the practical focus on helping students complete actual research assignments. They also lauded the convenience of the Ask a Librarian link that encourages students to contact a librarian in real time while they move through the LOBO tutorial.

Since 2002, librarians continue to offer training to new ENG 101 instructors to ensure familiarity with LOBO and best practices for integrating the tutorial into ENG 101.

### *Assessing and Planning Future Development*

Library literature emphasizes the importance of assessing the outcomes of library instruction. Lindauer states, "an increasingly important concern for academic librarians is how to document and measure the ways that the library, learning resources, and computer services units make a difference in the academic quality of life for students and faculty."<sup>16</sup> Franks et al. also underscore the significance of assessment in "meet[ing] accreditation standards, secur[ing] funding, maintain[ing] staffing levels, and achiev[ing] service and teaching excellence." Thus, tutorials must undergo assessment "to provide validation of our instructional effectiveness ... [and] convince library and campus administrators to continue to support these activities."<sup>17</sup>

Assessment of the LOBO tutorial is based on open-ended questions included throughout the tutorial to help students advance through the research process. These assessment questions help students analyze, synthesize, and evaluate material. Many tutorial questions focus on students' specific research topics. By the conclusion of the tutorial, students have answered questions that help them

- identify and narrow a topic
- select keywords and extrapolate synonyms and variants
- search a database and the NCSU Libraries' catalog for articles and books on a topic
- use Google to search for related Web sites
- evaluate sources according to specified criteria

**Figure 19.1. Instructional content before assessment revisions**

*Evaluate Web sites—Authority*

Determining who created a Web site is critical in being able to judge its quality. Anonymous information should not be used for academic research.

1. Can you tell who (person or institution) created the Web site? Look at the very top or bottom of the Web page for a name, email address, or "About Us" or "Contact Us" link.
2. Are the author's credentials listed on the site? If you can't find these details on a Web site, try typing an author's name into a search engine to get biographical information.

- select appropriate support for arguments
- decide when to paraphrase, summarize, or quote directly from sources
- develop citations to avoid plagiarism

Students view their answers to the open-ended questions in the form of an online worksheet that they can print or email to their instructors. For instructors, the worksheets serve as self-checks, discussion starters, or as evidence that students have explored all sections of the tutorial.

For librarians, the database that stores student answers is a rich source of assessment data. However, because students' answers to the open-ended questions in LOBO are specific to each student's research process, they

are not scorable as "right" or "wrong." Instead, NCSU librarians have developed "rubrics," or charts describing different levels of student performance, to aid in the assessment of answers. Each semester, librarians select one or two questions in the LOBO tutorial for assessment. Then, they score a random sample of student responses to the question using the rubric for that question. Assessment results are used to describe students' information literacy skill level, isolate areas for improvement, and celebrate successes.

**Results**

The assessment of the LOBO tutorial is an iterative process. Each semester, students' answers to new questions are assessed and

**Figure 19.2. Instructional content after assessment revisions**

*Evaluate Web sites—Authority*

The URL (Web address) and author information for a Web site reveal a lot about site reliability.

Determining who created a Web site is critical in being able to judge its quality. Generally, anonymous information should not be used for academic research.

Consider the following questions when you're evaluating the authority of a Web site:

1. What type of domain does the site come from?  
Government sites use .gov and .mil domains. Educational sites use the .edu domain. Non-profit organizations use .org and business sites use .com. Generally, .gov and .edu sites are considered more trustworthy than .org and .com sites.
2. Who "published" the site?  
The name between http:// and the first / usually indicates what organization owns the server the Web site is housed on. Learning about the organization that hosts a site can give you important information about the site's credibility.
3. Is it a personal Web site?  
Look for the names of companies that sell Web space to individuals, like AOL or GeoCities. Also look for a tilde (~). Tildes are often used to signify a personal Web site. Personal sites are considered less reliable than sites supported by organizations.
4. Can you tell who (person or institution) created the site?  
Look at the very top or bottom of the Web page for a name, email address, or "About Us" or "Contact Us" link.

**Figure 19.3. Writing prompt before assessment revisions**

Answer the questions above for the Web site you're evaluating. Overall, does what you know about the authorship of the Web site indicate that it's a good resource?

changes made to improve instruction. For example, the LOBO question that elicits information about students' abilities to use authority as a criterion for evaluating a Web site has been assessed twice. The first time, librarians used a rubric to score fifty student responses to the question that asks students to answer to a series of questions about the authority of a Web site they are considering as a source for an academic paper or project. Librarians discovered that a majority of students were able to address the authority of a Web site (88 percent). Most students also demonstrated that they were able to refer to indicators of authority (90 percent). However, less than a third (32 percent) of students could give specific examples of authority indicators from the site they were evaluating. In addition, fewer than half (44 percent) could provide a rationale for accepting or rejecting the Web site for use in their assignment based on their assessment of the site's authority. The results of this first assessment were vital to the improvement of the rubric, the content of the tutorial (figures 19.1 and 19.2), and the open-ended questions that form the writing prompt (figures 19.3 and 19.4).

A year later, after both the tutorial and the assessment rubric were revised, librarians assessed the same LOBO question. This time, 100 percent of students addressed the authority of the site and 93 percent could give specific examples of authority indicators from a site they were evaluating. However, only 50 percent of students could provide a reason for accepting or rejecting a Web site for use in an assignment. Although this was an improvement over the previous year, students appeared to need additional instruction. In response, NCSU librarians designed a new lesson plan that ENG 101 instructors can use help students make final determinations about the usefulness and appropriateness of Web sites.

**Conclusions**

The effectiveness of LOBO as an information literacy instruction tool has been illustrated in multiple ways. The LOBO tutorial has been honored with the ALA Library of the Future Award and the PRIMO Site of the Month Award in 2003. In recent years, the tutorial has been the subject of conference presentations at EDUCAUSE, ACRL, and various

**Figure 19.4. Writing prompt after assessment revisions**

Respond to the following prompts in the space below, using complete sentences:

- Identify the "domain type" of the site you're evaluating and explain why that is acceptable or unacceptable for your needs.
- Identify the "publisher" or host of the site and tell what you know (or can find out) about it.
- State whether or not the site is a personal site and explain why that is acceptable or unacceptable for your needs.
- State who (name the person or institution) created the site and tell what you know (or can find out) about the creator.
- Look for the author's credentials on the site. List his/her credentials and draw conclusions based on those credentials. If there are no credentials listed, tell what conclusions you can draw from their absence.
- Using what you know about the AUTHORITY of this Web site, explain why it is or is not appropriate to use for your paper/project.

national assessment conferences. In the three years since its launch, the tutorial software has been copied and adapted by more than ten other libraries in higher education.

In addition to external benchmarks of success, NCSU librarians continue to improve the tutorial. Each semester, the assessment of student responses to LOBO questions allows NCSU librarians to improve the tutorial and ensure that it continues to support the ENG 101 curriculum. These assessment efforts have also given rise to a suite of

lesson plans that support ENG 101 instructors who wish to extend LOBO content in their classrooms. Technical improvements continue. During the 2006/7 academic year, NCSU librarians plan to migrate LOBO from a HTML-based Web template to a content management system so that recommendations resulting from assessment can be followed quickly and easily. Under watchful eyes, LOBO has a promising future as a flagship of information literacy instruction at NCSU Libraries.

## Notes

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